

## SECTION II. INSTALLATION

### 16.2.1 INTRODUCTION

To install the thunderstorm sensor, the mounting pole is installed, the main enclosure is installed on the mounting pole, the sensor is assembled, and electrical connections are made. Following installation, the sensor must be configured. Refer to table 16.2.1 and figures 16.2.1 through 16.2.3 for installation and table 16.2.2 to configure the sensor. After installation, refer to instructions contained in Section V for inspecting the sensor.

**Table 16.2.1. Thunderstorm Installation Procedure**

| Step | Procedure  |
|------|--|
|      | <p>Tools and Materials Required:</p> <ul style="list-style-type: none"> <li>Two 15/16-inch wrenches</li> <li>7/16-inch wrench and torque driver</li> <li>11/32-inch wrench</li> <li>Large flat-tipped screwdriver</li> <li>Large pliers (12 inch, 2-1/4 inch capacity, curved jaw)</li> <li>7/16-inch hex key wrench and torque driver</li> <li>Cable ties</li> </ul> <p style="text-align: center;"><b><u>WARNING</u></b></p> <p>Death or severe injury may result if power is not removed from sensor prior to maintenance activities. Ensure that circuit breakers supplying power to sensor are set to off (right) position.</p> <p style="text-align: center;"><b>NOTE</b></p> <p>DCP Thunderstorm sensor installation requires prior or concurrent ECP E96SM05F189 (DCP Power Expansion) installation. ECP E96SM05F192 (ACU/SCA Firmware Version 2.45 and DCP Firmware Version 1.80) is also required.</p> |
| 1    | At DCP (SCA), open equipment cabinet door, set UPS power switch to 0 (OFF) on CLASS II systems only, and turn off UPS POWER circuit breaker A1A3A1 (DCP) or A1A3CB21/CB22 (SCA).   |
| 2    | Open DCP (SCA) Power Distribution Panel and turn off DCP (SCA) power. This removes all DCP (SCA) and sensor power.   |
| 3    | Open DCP (SCA) Faraday box to access sensor power wiring and fiberoptic modems.  |
| 4    | For the DCP, insert circuit breaker module (62828-40155-100) into A1A3A2 position. For the SCA, install ½A breaker (62828-90037-6) in A1A1A3CB13 and 1A breaker (62828-90037-1) in A1A1A3CB14, using screws (MS51957-27), lock washers (AA55610-136), and flat washers (MS15795-805) supplied. For SCA, connect wires (W106) to circuit breaker terminals as marked.   |
| 5    | Remove blank cover from A3A1(DCP) or A3A8 (SCA) (on Faraday Box) position and save gasket.   |
| 6    | Install fiberoptic modem (62828-90006-1) and gasket in position A1 (DCP) or A8 (SCA) using screws (62828-90075-1) and washers (62828-90174-1).   |
| 7    | Locate SIO connector in harness marked M/WA3A1J1 (DCP) or P8 M/W A3A8J1 (SCA). Attach connector to fiberoptic modem installed in position A1 (DCP) or A8 (SCA) and tighten connector screws.   |
| 8    | Remove protective plug from 3/4" hole on bottom of DCP (SCA). If Line Drivers are installed, a conduit outlet tee (62828-90257-1, 62828-90258-1, 62828-90259-1) must be installed at DCP (SCA) end of conduit running to wind sensor using a conduit hub (62828-90426-1) and close nipple (MS51953-97), with conduit adapters (62828-90260-1) to connect tee to hub and liquidtight conduit connectors. Note locations of existing wire and cable terminations to wind sensor for reconnection after tee installation (when used).   |
| 9    | Install connector (62828-62828-90097-1) and O Ring gasket (62828-90293-1). Route fiberoptic cable, power wiring, and flex conduit through hole on bottom of DCP (SCA). Secure flex conduit to connector.   |

Table 16.2.1. Thunderstorm Installation Procedure -CONT

| Step                  | Procedure  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
|-----------------------|--|---------------------|---------------------|----------------------|----------------------|----------------------|---------|----------------------|----------|--------------------|----------------------|-----------------------|----------|--------------------|--------|--------|-----------------------|--------|--------|
| 10                    | Connect fiberoptic cable to fiberoptic modem installed in Step 6. Ensure that RX and TX are properly connected.  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 11                    | Connect sensor power wires as follows. Strip insulation back ¼inch from wire ends. <table><tr><td><u>Wire</u></td><td><u>DCP Terminal</u></td><td><u>SCA Terminal</u></td></tr><tr><td>M16878/1BJE0 (black)</td><td>A17-3</td><td>A17-11</td></tr><tr><td>M16878/1BJE9 (white)</td><td>A18-3</td><td>A18-11</td></tr><tr><td>M16878/1BJE5 (green)</td><td>A17-GND</td><td>A17-GND</td></tr><tr><td>M16878/1BJE2 (red)</td><td>A17-19</td><td>A17-23</td></tr><tr><td>M16878/1BJE4 (yellow)</td><td>A18-19</td><td>A18-23</td></tr></table> | <u>Wire</u>         | <u>DCP Terminal</u> | <u>SCA Terminal</u>  | M16878/1BJE0 (black) | A17-3                | A17-11  | M16878/1BJE9 (white) | A18-3    | A18-11             | M16878/1BJE5 (green) | A17-GND               | A17-GND  | M16878/1BJE2 (red) | A17-19 | A17-23 | M16878/1BJE4 (yellow) | A18-19 | A18-23 |
| <u>Wire</u>           | <u>DCP Terminal</u>  | <u>SCA Terminal</u> |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE0 (black)  | A17-3  | A17-11              |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE9 (white)  | A18-3  | A18-11              |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE5 (green)  | A17-GND  | A17-GND             |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE2 (red)    | A17-19   | A17-23              |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE4 (yellow) | A18-19   | A18-23              |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 12                    | In SCA (only), connect jumpers as follows. Strip insulation back ¼inch from wire ends. <table><tr><td><u>Wire</u></td><td><u>From</u></td><td><u>To</u></td></tr><tr><td>M16878/1BJE0 (Black)</td><td>A1A4-5B</td><td>A1A4-8B</td></tr><tr><td>M16878/1BJE0 (Black)</td><td>A1A4-12C</td><td>A1A4-14C</td></tr><tr><td>M16878/1BJE9 (White)</td><td>A1A4-17A</td><td>A1A4-20A</td></tr></table>  | <u>Wire</u>         | <u>From</u>         | <u>To</u>            | M16878/1BJE0 (Black) | A1A4-5B              | A1A4-8B | M16878/1BJE0 (Black) | A1A4-12C | A1A4-14C           | M16878/1BJE9 (White) | A1A4-17A              | A1A4-20A |                    |        |        |                       |        |        |
| <u>Wire</u>           | <u>From</u>  | <u>To</u>           |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE0 (Black)  | A1A4-5B  | A1A4-8B             |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE0 (Black)  | A1A4-12C   | A1A4-14C            |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE9 (White)  | A1A4-17A   | A1A4-20A            |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 13                    | At top of left DCP (SCA) mounting pole, remove end cap.  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 14                    | Install pipe extension (62828-40418-1) using pipe coupler (MS39233-11).  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 15                    | Reinstall pipe cap on top of extension.  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 16                    | Using hardware supplied with sensor, install thunderstorm sensor mounting brackets on sensor (figure 16.2.1) and mount sensor on pole extension .  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 17                    | Remove retaining nut from end of flex conduit and install gasket P/N 62828-90097-1 on conduit. Route fiberoptic cable, power wiring, and flex conduit through entry hole on sensor. Secure flex conduit to sensor using retaining nut removed at beginning of this step.   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 18                    | At thunderstorm sensor, open main enclosure door.  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 19                    | Remove plastic seal protecting liquid-tight coupler at top of enclosure. Loosen large hexagonal nut at top of enclosure several turns. Do not completely unscrew large hexagonal nut. <div><b>CAUTION</b><br/>To avoid breaking glass diffuser at end of antenna, do not remove protective rubber tubing on antenna until sensor is mounted.</div>   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 20                    | Arrange antenna cable to hang freely from bottom of antenna housing. Carefully feed connector end of cable into liquid-tight coupler and pull cable through to inside of enclosure and guide antenna end into opening in liquid-tight coupler. While holding antenna perpendicular to top of enclosure, slowly and gently push antenna into liquid-tight coupler until fully seated as shown in figure 16.2.2.   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
|                       | <div><b>CAUTION</b><br/>Failure to properly tighten liquid-tight coupler nut will result in moisture damage.</div>   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 21                    | Hand tighten hex nut on liquid-tight coupler.  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 22                    | Route antenna cable under clamps and connect to electronics module J104 as shown in figure 16.2.3.   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 23                    | Connect spade lug to ground terminal located below antenna mounting coupler.   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 24                    | Connect sensor power wires as follows. Strip insulation and install lug (62828-90132-11) on wire. <table><tr><td><u>Wire</u></td><td><u>Terminal</u></td></tr><tr><td>M16878/1BJE0 (Black)</td><td>TB1-1</td></tr><tr><td>M16878/1BJE9 (White)</td><td>TB1-2</td></tr><tr><td>M16878/1BJE5 (Green)</td><td>TB1-3</td></tr><tr><td>M16878/1BJE2 (Red)</td><td>TB1-4</td></tr><tr><td>M16878/1BJE4 (Yellow)</td><td>TB1-5</td></tr></table>  | <u>Wire</u>         | <u>Terminal</u>     | M16878/1BJE0 (Black) | TB1-1                | M16878/1BJE9 (White) | TB1-2   | M16878/1BJE5 (Green) | TB1-3    | M16878/1BJE2 (Red) | TB1-4                | M16878/1BJE4 (Yellow) | TB1-5    |                    |        |        |                       |        |        |
| <u>Wire</u>           | <u>Terminal</u>  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE0 (Black)  | TB1-1  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE9 (White)  | TB1-2  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE5 (Green)  | TB1-3  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE2 (Red)    | TB1-4  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| M16878/1BJE4 (Yellow) | TB1-5  |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |
| 25                    | Connect fiberoptic cable to fiberoptic modem in sensor making sure RX and TX are installed properly.   |                     |                     |                      |                      |                      |         |                      |          |                    |                      |                       |          |                    |        |        |                       |        |        |

Table 16.2.1. Thunderstorm Installation Procedure -CONT

| Step | Procedure   |
|------|---|
| 26   | Install lug (62828-90253-1) on 10 ga. solid wire (QQW343S10S1B). Connect wire to ground stud on sensor using hardware supplied with sensor. Connect other end of ground wire to system ground wire running across bottom of DCP (SCA) using split bolt connector (62828-90254-1).   |
| 27   | Secure flex conduit and ground wire to DCP (SCA) pole using cable ties (62828-90256-1) as required.   |
|      | <b>NOTE</b><br>Perform this step only when all actions requiring access to the interior of the sensor enclosure are complete.   |
| 28   | The desiccant bag must be removed from airtight outer packaging (DO NOT open the desiccant bag containing desiccant granules) and flattened by shaking and patting to evenly distribute its contents so that it may be placed on top of electronics module. Ensure that desiccant bag does not interfere with door or other internal assemblies. Turn sensor ON using switch S1 inside enclosure; close and secure sensor door. Remove protective rubber tubing on antenna. |
| 29   | At DCP (SCA), close Faraday box and secure using original hardware.   |
| 30   | Set thunderstorm sensor circuit breakers A1A3A2 (DCP) or A1A3CB13/CB14 (SCA) to "ON".   |
| 31   | At DCP Turn UPS "OUTPUT POWER" A1A3A1 to "ON". Set UPS power switch to 1 (ON) CLASS II SYSTEMS ONLY. (At SCA turn UPS#1 "OUTPUT POWER" A1A3CB21 to "ON".)   |
| 32   | Turn ON DCP (SCA) Power Circuit Breaker in Power Distribution Panel. Close and secure Power Distribution Panel Door. Power is now restored to DCP (SCA) and all sensors. Secure all doors.  |

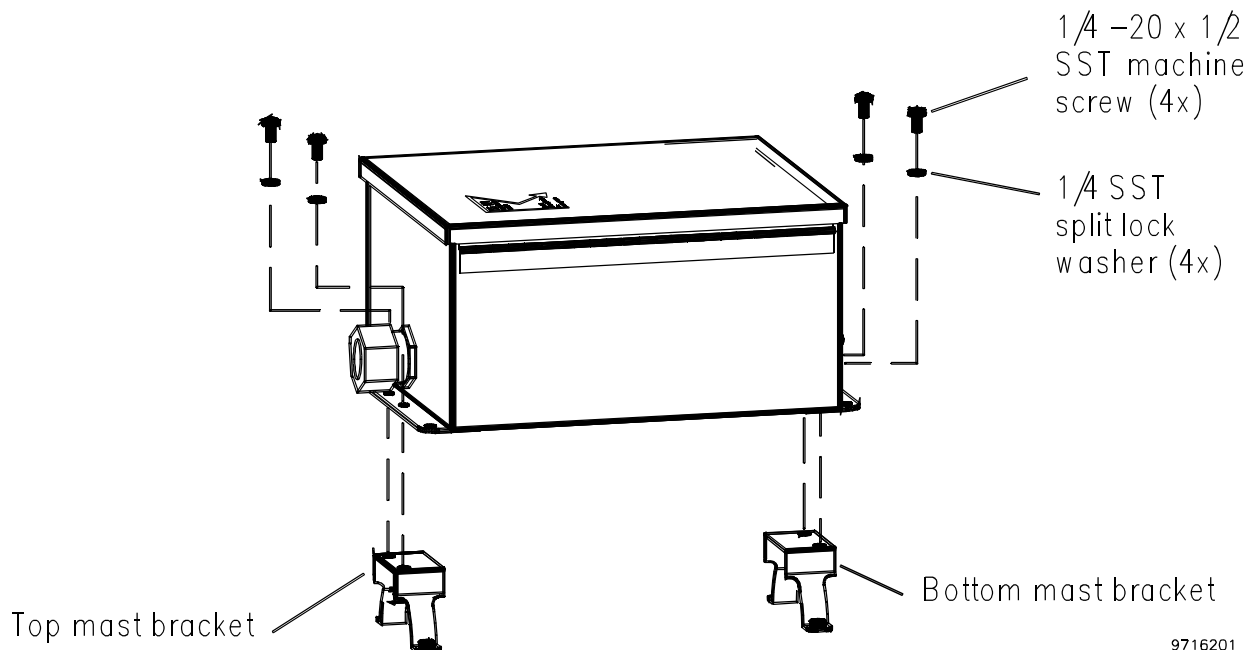


Figure 16.2.1. Thunderstorm Sensor Top and Bottom Mounting Brackets Assembly

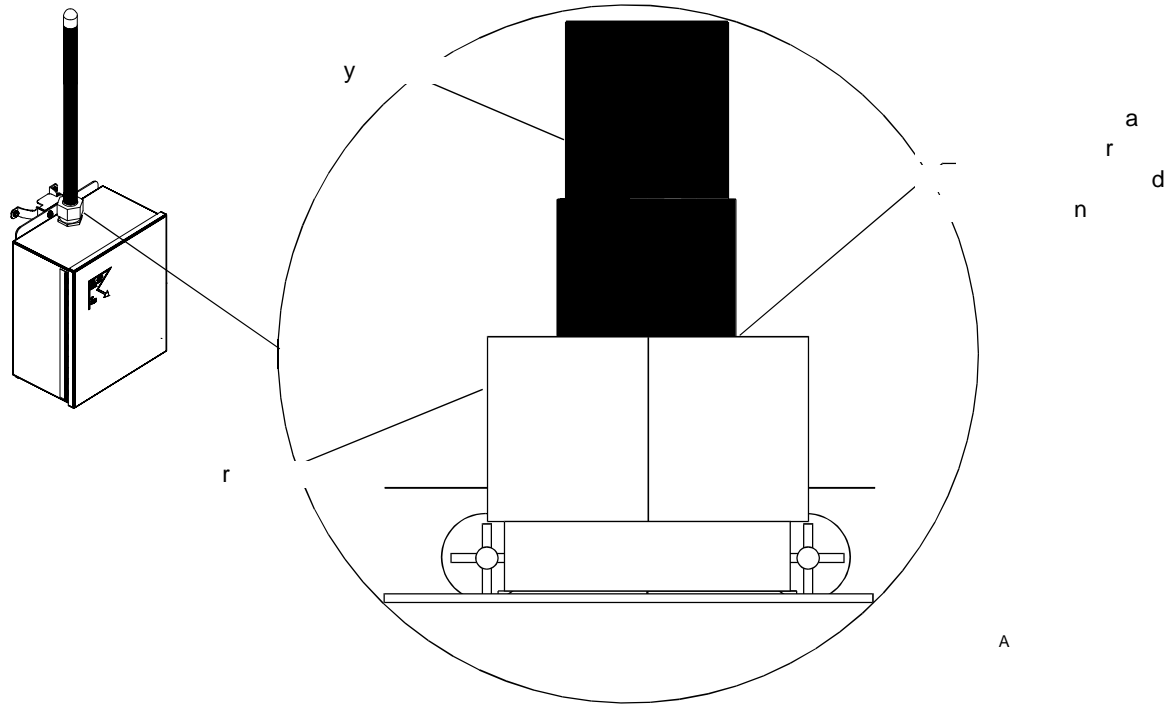


Figure 16.2.2. Thunderstorm Sensor Antenna Seating

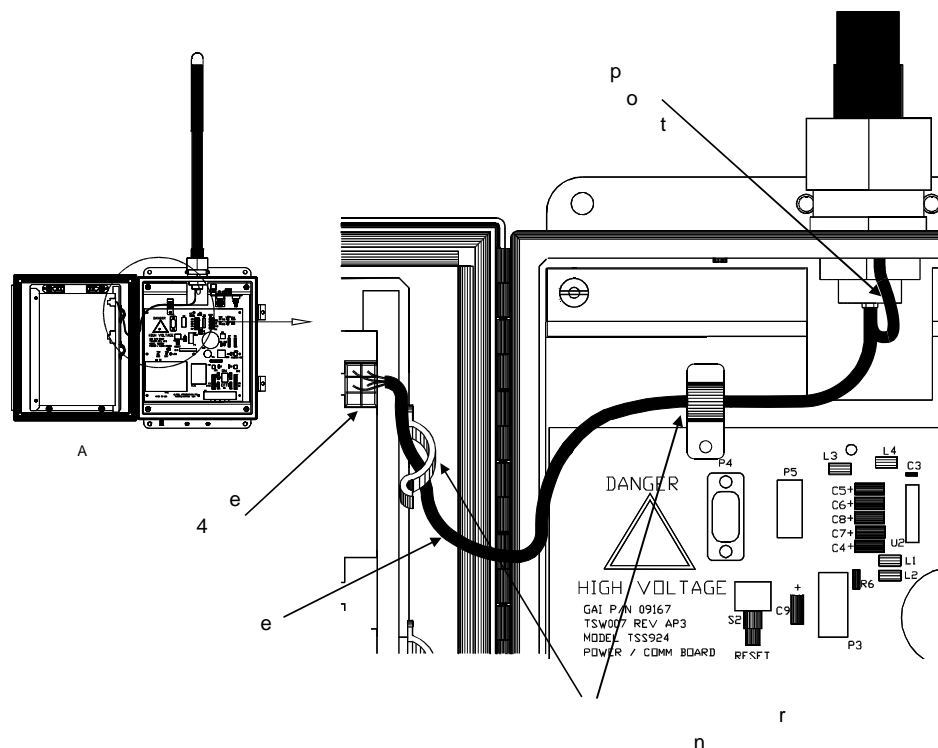


Figure 16.2.3. Thunderstorm Sensor Antenna Cable Routing